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ABSTRACT

Three current approaches to the investigation of active learning and a study of two designs of a field-based graduate course are considered. The first approach, by Lenore Borzak and Barbara Hursh (1977, 1979), centers around the study of students' cognitive development and changes in self-perception stemming from experiential learning. Another thrust, taken by Allen Tough (1978, 1979), focuses on the exploration of strategies and processes that adults employ in designing and carrying out active learning programs of their own choosing. David Kolb (1981, 1976), in a third perspective, deals with an investigation of individual learning styles and their interrelationships within a theory of experiential learning. The study concerned students' perceptions of their learning experiences in regard to two internship models of the College of Education of The Cleveland State University. An original internship model of the masters degree program in postsecondary educational instruction, administration, and counseling was compared to a revised internship model designed to help learners develop self-directed learning skills (Tough), to enable them to experience benefits of decentering and reciprocity (Borzak and Hursh), and to encourage them to utilize a variety of learning styles (Kolb). Twenty-three students from the original internship program version, and 20 from the redesigned course responded were administered questionnaires. The findings, while not always consistent with conceptual expectations, revealed provocative relationships among theories of active learning. (SW)

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Active Learning for Postsecondary Educators:

A Study of Two Learning Designs

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Abstract

Research and theory related to experiential learning hold important implications for designers and teachers in postsecondary educational organizations. Three current approaches to the investigation of active learning are discussed. Next, a research study of two designs of a field-based graduate course is reported. Participants in both versions of the course responded to two questionnaries measuring their perceptions of their learning experiences. Twenty-three participants (55%) from the earlier version and twenty (95%) from the redesigned course responded. The findings, while not always consistent with conceptual expectations, revealed provocative relationships among theories of active learning. Efforts to apply concepts of experiential learning to course design resulted in measureable differences in perceived quality of learning. Key questions for further investigation are highlighted.

Active Learning for Postsecondary Educators: A Study of Two Learning Designs

No assumptions have plagued higher education more persistently than these: "...education occurs as an activity only at certain times in people's lives, in certain institutional settings, at certain times of of day, and in certain few accepted formats" (Carnegie Commission, 1973, p. V.). While these assumptions may characterize the conditions under which teaching typically occurs, they have never represented fact concerning how students actually learn. Only recently in the postsecondary education community has a genuine concern backed by important research helped educators to focus on people as active learners rather than viewing them merely as passive receivers of knowledge.

Until the 1960's very little of what was known about adult learning had influenced established higher education institutions. Educators had given less consideration to the concept of learning, which often dealt with feelings and personal relationships, while more rigorously pursuing the study of teaching or instructional methodology (Cross, 1977; Dubin & Taveggia, 1968; Levine, 1978; Milton, 1972; Siegel, 1968).

Kogan (1971) suggests that there was an "almost total lack of articulation...between the psychological study of cognition, on the one hand, and educational research and practice, on the other" (p. 243). Kolb (in press) reports that learning research had focused primarily on the "...peripheral norms of academic disciplines (social attitudes, personality patterns, sex distribution) rather than [on] the pivotal norms governing learning and inquiry" (p. 6). Historical and psycholgoical factors help

to explain this phenomenon. Historically, higher education institutions have passed on to younger generations the intellectual traditions and achievements of the past. Teaching was recognized as the process by which cognitive knowledge was transmitted. Great emphasis was placed, therefore, upon the study of expository teaching and receptive learning. Traditional students, aged 17 to 25, were characterized as consumers rather than co-producers of knowledge.

As illustrated by the work of Ausubel (1968) and Gagne (1970), approaches to the design of instruction from the perspectives of cognitive and behaviorist psychologies have traditionally resulted in prescriptions emphasizing the sequencing of predetermined content with the goal of optimizing various educational outcomes (e.g. speed of acquisition, retention, transfer). Although the study of individual differences in cognitive and affective learning styles has gained the attention of both learning and instructional psychologists in recent years, instruction in colleges and universities still does not adequately take into account differences among students as learners. Most practitioners in higher educational institutions have not had sufficient opportunity to refocus their view of the student from that of passive receiver to that of active, integrating learner.

The results of recent research suggest a future where many styles of learning will be institutionally desirable. No longer need all participants in higher learning be subjected to directive teaching aimed at cognitive processes alone. Institutions will more readily build upon developmental achievements which have accompanied adult life. Learning

will be recognized as intellectual and experiential, resulting from the integration of cognitive and developmental processes.

An Emerging Learning Model

Experiential approaches to learning have been gaining understanding and respect in postsecondary education over the past decade. In the tradition of John Dewey, Kurt Lewin, and Carl Rogers, education (even higher education) is being seen to involve not only subject content, but the growth processes of the learners as well. Weathersby (1978) has pointed out that "people's learning interests are embedded in their personal histories, in their visions of who they are in the world and in what they can do and want to do" (p. 19). Mere intellectual knowledge is being increasingly recognized as sterile without the commitment of the learners to give it vitality.

Research, theory, and practice in adult education (Gross, 1977; Kidd, 1959; Knowles, 1973; Smith, Aker & Kidd, 1970), while considered irrelevant to higher education for many years, have recently become a major part of the foundation for the myriad of "non-traditional" higher educational programs. Several other factors, too, have helped bolster the active and self-directing role of the learner in higher education. For one thing, the realization of the prophecies of the futurists (Morphet & Jesser, 1968; Shane, 1973; Toffler, 1970) regarding the exponential growth rate of knowledge has finally exposed the passive role of the learner as ineffective and obsolete. The proliferation of alternative routes to higher learning under the auspices of institutions such as business and industry, the military, and proprietary schools has also caused administrators and faculty members in higher educational institutions to reevaluate their missions and approaches to learning. The

coming shortage of students in the traditional age group for higher education reinforces the other trends mentioned.

At the graduate level, traditional learning models have persisted by and large, although internships, practicums, and field based courses have been part of professional graduate education for years. There is a growing movement, however, toward involving graduate students in all areas more actively in learning projects and in emphasizing experiential learning strategies (Poppenhagen, 1979). Colleges and universities across the country have begun to offer graduate programs which credit learning activities of an experiential nature (Innovative...Directory, 1976; Somers, 1979). Poppenhagen and Byxbee (1981) have discussed the changing faculty roles fostered by emerging learning models.

Designs for Active Learning

In the field of active learning in postsecondary settings, three current approaches to investigation suggest the richness of efforts to achieve understanding and to improve practice (Schuttenberg & Poppenhagen, 1980a). The first approach, by Lenore Borzak and Barbara Hursh (1977; 1979), centers around the study of students' cognitive development and changes in self-perception stemming from experiential learning. Another thrust, taken by Allen Tough (1978; 1979), focuses on the exploration of strategies and processes that adults employ in designing and carrying out active learning programs of their own choosing. David Kolb (in press; 1976), in a third perspective, deals with an investigation of individual learning styles and their interrelationships within a theory of experiential learning.

Borzak and Hursh suggest that experiential learning may, paradoxically, foster many of the qualities of learning traditionally sought in classroom

based programs of liberal education. Notable among these are decentering, the use of multiple perspectives in dealing with personal and societal problems, and reciprocity, the ability to achieve mutually satisfying and productive relationships with others in work and social settings. In combination, decentering and reciprocity produce a synergistic effect having both affective and cognitive outcomes. Two such outcomes, desirable from both the liberal arts and professional point of view, are holistic thinking and an increased sense of self competence.

Allen Tough, a teacher and researcher from the Institute for Studies in Education in Toronto, Canada, has focused his studies on how adults engage in self-developed (self-directed) learning projects. He has determined that "the typical adult conducts five of them per year, altogether spending 500 hours on major learning efforts." Moreover, while some of these learning projects take place in formal classroom settings, "more than 70 percent are self-planned, and others rely on friends and peer groups" (1978, p. 9).

A third researcher and theorist, David Kolb, from Case Western Reserve University, has devoted many years to the study of adult learning styles. Taking as his point of departure the experiential learning model developed by Kurt Lewin and his associates, Kolb and Fry (1975) define two primary dimensions of the learning process: quality of experiencing and level of activity. They maintain that "learning requires abilities that are polar opposites and the learner, as a result, must continually choose which set of learning abilities he will bring to bear in any specific learning situation" (p. 36).

What impact will these emerging models of learning ultimately hold for postsecondary education? Their prescriptions are ambitious. Hursh

and Borzak confront the very heart of higher education's tradition when they identify experiential learning as capable of fostering many of the liberal qualities usually associated with directed classroom programs. Equally dramatic is Tough's description of how adults learn. This new understanding may finally bring into being student centered reform long predicted for postsecondary education. As if to validate these prescriptions, Kolb describes the theoretical tools to make experiential learning a key to expanded learning repertoires for the future, not only in the tradition of liberal learning, but for adult learning throughout life. Separately, these models represent pieces of the emerging view of learning held by many educators. Collectively, they provide a substantial foundation for program development and change. A report of an attempt to bring about such a change is presented in the following sections of this paper.

The Postsecondary Internship

Since 1971, the College of Education at The Cleveland State University (CSU) has offered a masters degree program in postsecondary educational instruction, administration, and counseling. As in other professional preparation programs, a field experience (Internship) component was included.

Until recently, the CSU Internship was relatively unstructured. Participants were placed in an organization in an employment field matching their career objectives, but the content and quality of their learning experiences were not carefully planned or closely monitored. In such a setting, self-directed learning skills might be able to emerge, and they did in some cases. Many participants, however, experienced a sink-or-swim situation where systematic learning from experience was subordinated to a

primary concern for survival in the organization and in the graduate program itself.

During the 1977-78 academic year, the Internship was redesigned based upon some of the ideas in the learning models discussed earlier in this paper (Schuttenberg & Poppenhagen, 1980b). The emphases in the redesigned Internship were to help learners develop self-directed learning skills (Tough), to enable them to experience some of the benefits of decentering and reciprocity (Borzak and Hursh), and to encourage them to utilize a variety of learning styles (Kolb).

Tough identified three types of self-directed learning skills: planning skills, implementing skills, and evaluating skills. The redesign of the Internship sought to help participants build skills in these three areas by providing instruments and guidelines for setting learning objectives, obtaining needed resources, and measuring learning outcomes.

To assist students in widening their perspectives in dealing with issues and problems (i.e. decentering) much emphasis in the redesigned Internship was placed on helping students relate theory to practice by means of individual analysis and one-to-one and group discussions. The development of mutual influence (i.e. reciprocity) was fostered through the encouragement of close relationships with on-site and university mentors.

The concept of different levels of learning was employed in order to accommodate diverse participant learning styles. Each Internship participant formulated a learning contract consisting of a number of experiences at four levels of involvement. Several experiences at the observation and and at the interview or discussion levels were planned by each participant. In addition, each person included a number of experiences at the limited

participation level, where he or she would gain hands-on experience over a number of days or weeks. Finally, at least two major projects at the sustained participation level, where the participant assumed primary responsibility for results, became a part of each learning contract. This variety of experiential learning approaches enabled participants to employ all four of Kolb's (1976) learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation.

The participants' on-site learning experiences were analyzed and evaluated for the purposes of assessing potential success as practitioners. Review of accomplishments within the organization, attainment of learning goals, written interpretive analyses of the relationships between theory and practice, and instructors' and supervisors' comments all entered into the evaluation of learning. Ultimately, information gained through the learning evaluation was used by the participants to establish employment credentials and to build job search skills.

The Present Study

In order to compare participants' perceptions of the character and quality of their learning experiences under the original and revised Internship models, a questionnaire study was undertaken. A survey instrument, the Internship Perception Profile (IPP), was developed by the authors based on concepts of Hursh and Borzak, and Tough. Forty-four items were employed in the construction of eight subscales corresponding to the constructs of a) decentering, b) reciprocity, c) holistic thinking, d) sense of self-competence (Hursh and Borzak), e) self-directed learning approach, f) self-directed learning skills, g) rewards of learning, and

h) obtaining relevant help for learning (Tough).[1] Total scores on these subscales served as dependent variables. The IPP, together with Kolb's (1976) Learning Style Inventory (LSI), was sent to sixty-three persons who had completed the Internship. Forty-two participants had completed the earlier version of the Internship while 21 had experienced the revised version. Together, the two groups comprised the total population of Internship enrollees for 1978 and 1979. The return rate of the instrument was 23 (55%) for the earlier Internship and 20 (95%) for the revised Internship. Participants ranged in age from 22 to 58. The average age was 34. Eighty-seven percent (20) of the earlier practicum and 75 percent (15) of the revised practicum groups were female reflecting the Program's overall female enrollment majority.

Hypotheses

A series of hypotheses related to predictions suggested by the theoretical positions of Hursh and Brozak, Tough, and Kolb were tested. Consistent with Hursh and Borzak, it was hypothesized that when compared to persons completing the earlier Internship, persons completing the revised Internship would show higher mean scores on subscales on the IPP designed to measure the characteristics of (a) decentering, (b) reciprocity, and the outcomes of the processes, (c) holistic thinking and (d) sense of self-competence.

As would be predicted by Tough's theoretical perspective, it was conjectured that persons completing the revised Internship would produce higher mean scores on IPP subscales intended to measure (a) the use of self-directed learning approach, (b) self-directed learning skills, (c) rewards of learning, and (d) obtaining relevant help for learning than would their counterparts experiencing the earlier Internship.

The usefulness of Kolb's taxonomy of learning styles was evaluated in a series of hypotheses exploring the relationship of Kolb's four learning styles[2] and scores on the IPP subscales of (a) decentering, (b) reciprocity, (c) holistic thinking, (d) sense of self-competence, (e) self-directed learning approach, (f) use of self-directed learning skills, (g) rewards of learning, and (h) obtaining relevant help. These hypotheses were evaluated for the combined participants from both Internship formats.

Findings

Each of the four hypotheses generated by the theoretical posture of Hursh and Borzak were evaluated by a series of t-tests comparing the mean scores of early Internship and revised Internship groups on the four appropriate IPP subscales. The results of these tests are reported in Table 1. It should be noted that persons omitting responses to any question on a subscale were deleted from the analysis for that subscale. As a result, the N for each group varies somewhat from subscale to subscale.

One of the t-tests, that for decentering, was found to yield a significant result ($t = 2.196$, $df = 41$, $p \leq .0338$). It should be noted that in each of the four comparisons reported in Table 1, the direction of the differences between means favored the revised Internship group. Also in each case, the standard deviations for the revised Internship group scores were smaller than those for the earlier Internship group, indicating a tendency for somewhat higher agreement among the scores of the revised Internship group.

Table 2 reports the results of t-tests employed to evaluate the four hypotheses related to Tough's theoretical position. Two of these results

Table 1

Results of t-tests Comparing Earlier and Revised Internship Participants on IPP Subscales of Decentering, Reciprocity, Holistic Thinking, and Sense of Self-Competence

Group	N	M	SD	df	t
		Decentering			
1[a]	23	27.61	5.03	41	2.196*
2	20	30.90	4.75		
		Reciprocity			
1	22	25.27	4.73	39	.4396
2	19	25.84	3.30		
		Holistic Thinking			
1	23	12.48	3.31	41	.4271
2	20	12.85	2.18		
		Sense of Self-Competence			
1	23	10.78	3.03	41	.4220
2	20	11.15	2.62		

[a]Group 1 is the earlier Internship; Group 2 is the revised Internship.

*$p < .05$.

proved to be significant, the use of self-directed learning approach ($t = 2.22$, $df = 35$, $p \leq .033$) and obtaining relevant help for learning ($t = 2.67$, $df = 36$, $p \leq .011$). Again it should be noted that the direction of the differences between means on the two remaining subscales favored the revised Internship group. The standard deviations for the revised Internship group again indicated a tendency for more consistent responses from this group when compared to the earlier Internship participants.

The usefulness of Kolb's taxonomy of four learning styles in predicting performance on the eight IPP subscales was assessed by classifying each member of the combined Internship groups as an accommodator, assimilator, converger, or diverger, on the basis of their scores on Kolb's Learning Style Inventory. Once the four groups were formed in this manner, a series of eight one-way Analyses of Variance was conducted comparing the mean scores of the four groups on all but one of the eight IPP subscales described above. The results of these ANOVA's are reported in Table 3.

Three of the resulting F ratios proved significant, Holistic Thinking ($F = 6.69$, $df = 3.34$, $p < .01$), Sense of Self-Competence ($F = 2.92$, $df = 3.34$, $p < .05$), and Self-Directed Learning Skills ($F = 4.43$, $df = 3.34$, $p < .01$). From Table 3, it can also be seen that of the four groups defined by the LSI, the mean scores for the Divergers are lower than those for the other three groups on each of the eight IPP subscales which formed the

Table 2

Differences Between Participants in Earlier and Revised Internships on Use of the Self-Directed Learning Approach, Self-Directed Learning Skills, Rewards for Learning, and Obtaining Relevant Help for Learning

Group	N	M	SD	df	t
Use of the Self-Directed Learning Approach					
1[a]	17	22.71	3.27	35	2.22*
2	20	20.60	2.65		
Self-Directed Learning Skills					
1	23	32.78	4.73	41	.85
2	20	33.80	2.71		
The Rewards of Learning					
1	23	22.65	4.63	41	1.25
2	20	24.10	2.49		
Obtaining Relevant Help for Learning					
1	19	14.16	3.99	36	2.67**
2	19	17.00	2.36		

[a]Group 1 is the earlier Internship; Group 2 is the revised Internship.

*$p < .05$.

**$p < .01$.

Table 3

Analysis of Variance on Various IPP Scores By

The Four LSI Learning Styles

PPP Variables	Accommodators Mean[a]	Assimilators Mean	Convergers Mean	Divergers Mean	F
Decentering	30.5	28.7	31.0	25.6	2.19
	(4)	(14)	(10)	(10)	
Reciprocity	26.2	26.3	26.5	23.2	1.47
	(4)	(12)	(10)	(10)	
Holistic Thinking	14.5	12.9	13.2	9.7	6.69*
	(4)	(14)	(10)	(10)	
Sense of Self-Competence	12.0	11.6	11.3	8.7	2.92*
	(14)	(14)	(10)	(10)	
Self-Directed Learning Approach	19.8	21.7	22.7	19.9	1.55
	(4)	(12)	(10)	(7)	
Self-Directed Learning Skills	32.5	33.9	35.1	30.3	4.43**
	(4)	(14)	(10)	(10)	
Rewards of Learning	24.0	23.1	24.6	21.8	1.08
	(4)	(14)	(10)	(10)	
Obtaining Relevant Help for Learning	16.0	15.5	16.5	13.5	1.16
	(4)	(12)	(10)	(8)	

[a](N)

*p < .05

**p < .01

basis for comparison. Also of interest is the fact that Convergers produced the highest mean scores of the four groups in all but two (Holistic Thinking and Sense of Self-Competence) of the eight IPP subscales.

Discussion

The interpretation of the data reported above requires the consideration of several factors. As would be expected, the return rate of the IPP questionnaire was notably higher for the revised Internship group (95%) than for the earlier group (55%). This may have resulted in some non-representativeness of the earlier Internship respondents, though the magnitude and influence of this condition can not be estimated. Also, the relatively small sample sizes have the effect of reducing the power of the statistical tests employed. However, even with this lower power, several significant results were obtained.

Finally, the qualities of the IPP questionnaire itself must be considered. Items employed in the construction of the eight subscales were selected on the basis of face validity, drawing from the descriptions of the researchers themselves. In order to determine the psychometric validity of the subscales, it will be necessary to obtain data from a larger number of respondents in order to conduct a factor analysis of the item sets. In the absence of these data, it is possible to examine the patterns of intercorrelations among the subscales. These patterns provide some preliminary indication of the instrument's performance. These intercorrelations are reported in Table 4.

Table 4 can be divided into three sections: intercorrelations among the four Hursh and Borzak subscales (S1 to S4), those among the four Tough sub-

Table 4

Intercorrelations of IPP Subscales

	S1[a]	S2	S3	S4	S5	S6	S7	S8
S1		.564***	.426**	.436**	-.182	.205	.380**	.642***
		(43)[b]	(43)	(43)	(37)	(43)	(43)	(38)
S2			.332*	.679***	-.269	.321*	.511***	.356*
			(41)	(41)	(35)	(41)	(41)	(36)
S3				.399**	.219	.517***	.358*	.440**
				(43)	(37)	(43)	(43)	(38)
S4					-.002	.365*	.440**	(.308)
					(37)	(43)	(43)	(38)
S5						.460**	.051	-.209
						(37)	(37)	(36)
S6							.664***	.388**
							(43)	(38)
S7								.552***
								(38)
S8								

[a]S1 = Decentering, S2 = Reciprocity, S3 = Holistic Thinking, S4 = Sense of Self-Competence, S5 = Self-Directed Learning Approach, S6 = Self-Directed Learning Skills, S7 = Rewards of Learning, and S8 = Obtaining Relevant Help for Learning.

[b](N)

*p < .05

**p < .01

***p < .001

scales (S5 to S8), and the intercorrelations among both sets of subscales.

An examination of Table 4 shows that the four Hursh and Borzak subscales are consistently intercorrelated. This finding is not surprising, based on the theoretically close relationships among these constructs. For the subscales based on Tough's dimensions, there are also a number of intercorrelations. The Self-Directed Learning Approach subscale (S5), however, appears to be conceptually distinct from the Rewards of Learning (S7) and the Obtaining Relevant Help for Learning (S8) subscales.

It is difficult to interpret the intercorrelations among the subscales in both sets. One noteworthy finding is that the Self-Directed Learning Approach subscale (S5) does not correlate significantly with any of the Hursh and Borzak subscales. Further evaluation of the eight subscales must await a more formal analysis based on larger sample sizes.

The findings of the study suggest that efforts to redesign the Internship experience to broaden participants' perspectives on the complexity of the world of practice and to appreciate the points of view of others (decentering) proved successful. Corresponding improvements in reciprocity were not shown, however. Without the synergistic effect of an improvement in both factors, Hursh and Borzak's theory would not lead to an expectation of heightened perceptions of holistic thinking or sense of self-competence.

The revised Internship was designed in such a way as to enable participants to plan learning projects, with the help of appropriate resource persons, based on a personal needs assessment. It was expected, therefore,

that participants in the revised Internship would show significantly higher scores on the IPP subscales related to the four Tough hypotheses than would the earlier group.

Counter to expectations, however, the earlier Internship group showed significantly higher scores on "Use of the Self-Directed Learning Approach" than did participants in the revised Internship. It is possible that the more structured design of the revised Internship, in providing guidelines not available to the earlier participants, inhibited, to some degree, the use of the self-directed learning approach. It should be remembered, however, that a smaller percentage of respondents from the earlier Internship answered the questionnaire. On the other three subscales related to the Tough hypotheses, (Self-Directed Learning Skills, The Rewards of Learning, and Obtaining Relevant Help for Learning), the mean scores favored the revised Internship participants, and in the latter, significantly so. It may have been that the revised Internship, while not casting participants as much on their own resources, enabled them to employ the help of others more effectively. This rationale may explain why the rewards of learning (including pride of accomplishment, learning about one's own learning style, and usefulness for career preparation) were significantly higher for participants in the revised Internship.

Based on Kolb's learning style theory, one would expect "Convergers" to thrive in an internship situation. The Convergers' strengths are Abstract Conceptualization and Active Experimentation, and they stress the practical application of ideas. However, because Convergers focus in on single "correct" answers and since they have somewhat narrow technical interests, one might expect a somewhat low score on decentering and reciprocity scales.

The reverse of these latter expectations was true in the present study. The Convergers showed the highest scores in decentering and reciprocity. They were also the highest in the other subscales with the exception of Holistic Thinking and Sense of Self-Competence. The Convergers showed significantly higher Self-Directed Learning Skills than did those with the three other learning styles. These skills include developing and implementing one's own learning approach, seeking out appropriate learning resources, setting deadlines, managing time, and controlling the learning design. Use of these skills would appear to be congruent with the Converger's learning approach.

The Diverger, on the other hand, is strong in imaginative ability and is able to view situations from many perspectives. These qualities, together with the Diverger's interest in working with people, would suggest that persons with this learning style would be high on decentering, reciprocity, and holistic thinking.

Again, the results of the present study do not support these expectations. In the three areas mentioned above, persons with the Diverger learning style showed the lowest scores in all three areas, and in holistic thinking, a significantly lower mean score than participants with the three other learning styles.

Generally speaking, participants with the Diverger learning style showed the lowest mean scores in all eight subscales of the IPP. Further study should be conducted to explore the relationships between the Diverger learning style and the various learning processes and outcomes measured by the IPP.

Of the four learning styles identified by Kolb, the Accommodator, with strengths in Concrete Experience and Active Experimentation, should be most compatible with an internship experience. In the present study, there were only four persons with this "action orientation" to learning (perhaps a reflection of the kinds of students who select a masters program in post-secondary education). Accommodators were relatively high in decentering, holistic thinking, and sense of self-competence. Kolb's (1976) description of the Accommodator as "relying heavily on other people for information rather than on one's own analytic ability" (p. 7) is borne out by the high score on the "Obtaining Relevant Help for Learning" subscale.

Areas for Further Study

This pilot study, though conducted using a limited population and a newly designed instrument, represents an important first attempt at understanding the relationships among three experiential learning theories.

It would be of interest to replicate this study with larger numbers of participants. If one were to divide respondents into two groupings - one group having high scores on the decentering and reciprocity sub-scales and the other group having low scores on both factors - it would be possible to test the combined effect of the two processes on holistic thinking and sense of self-competence.

Further investigation should also be carried out as to the relationship between Tough's principles of self-directed learning projects and the design of postsecondary educational experiences in institutional settings. Some questions worth pursuing are the following: What kinds of structure are most helpful in promoting self-directed learning? How can the motivational factors characteristic of self-directed learners be applied most

effectively in degree or certification programs? What kinds of "planners" are most helpful to students in promoting the skills of self-directed learning?

The relationships between the four Kolb learning styles and the Hursh and Borzak and Tough constructs have not been completely clarified by the present study. Once again, replication of this study with larger numbers of respondents would be a useful next step in providing additional insights.

Conclusions

The study's findings contribute to the small but growing body of research related to experiential learning and the learning needs of adults. Perhaps more uniquely, this study supports the thesis that a professional internship in postsecondary education designed in congruence with experiential learning theory will serve to benefit participants both as novice practitioners and as developing adults.

The research by Hursh and Borzak, Tough, and Kolb points to one conclusion: adults can play an important role in the teaching-learning transaction. For those who design learning programs for students in postsecondary education institutions, the present study has revealed new dimensions of concern and a number of practical planning considerations.

Educators and students alike need to utilize the processes of decentering and reciprocity in order to see more clearly each others' learning needs and points of view and in order to collaborate effectively in the design of learning programs. Some of the insights revealed by the study of self-directing learners should be applied more fully to the design of programs in the variety of postsecondary educational institutions. Finally,

teachers and students alike must become more aware of individual learning styles - not so much to segregate learners into separate instructional paths, but rather to begin to systematically meet the challenge of expanding the learning repertoires of maturing adult students.

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Footnotes

[1]Items developed for each subscale are available from the authors.

[2]Kolb (1976) identifies four learning styles: (1) Accommodation, an active, doing, risk-taking approach to learning, adapting well to new situations; (2) Assimilation, a theoretical, logical, approach, emphasizing inductive reasoning; (3) Convergence, a learning style emphasizing deductive reasoning and practical application of ideas; (4) Divergence, stressing imaginative, emotional, global perspectives.